

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2003-288154

(43)Date of publication of application : 10.10.2003

(51)Int.Cl.

G06F 3/02

G06F 1/16

H05K 5/02

(21)Application number : 2002-088797

(71)Applicant : CASIO COMPUT CO LTD

(22)Date of filing : 27.03.2002

(72)Inventor : MURAI YUJI

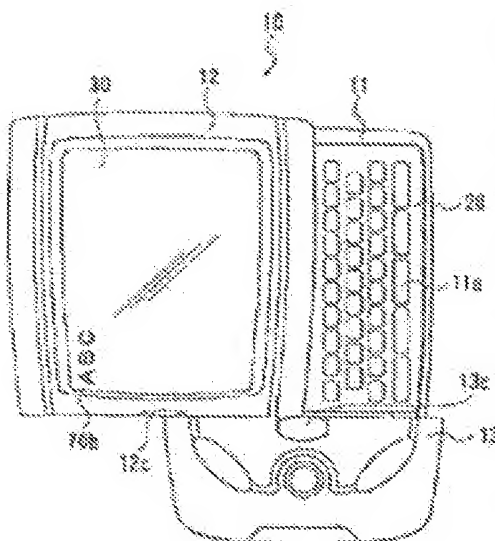
FUJII MASAO

## (54) ELECTRONIC APPARATUS

### (57)Abstract:

PROBLEM TO BE SOLVED: To provide an electronic apparatus that facilitates key entry operations and is user-friendly.

SOLUTION: The electronic apparatus is provided with a lengthwise apparatus body 10 having a display part 30; a keyboard 20, which is arranged exposable and storable to the apparatus body 10, enabling the key entry operation, while laterally placing the apparatus body 10; and display control means 60, 61a for switching display configuration, such that the keyboard 20 makes the display part 30 in the apparatus body 10 perform display 70a in conformity with the use condition where the apparatus body 10 is vertically placed in a storing state, and the keyboard 20 makes the display part 30 perform the display 70b in conformity with the use condition, where the apparatus body 10 is laterally placed in an exposed state.



(English Documents Translated by Translation Software)

(43) Date of publication of application : 10.10.2003

105K 5/02

FUJII MASAO

**PROBLEM TO BE SOLVED:** To provide an electronic apparatus that facilitates key entry operations and is user-friendly.

SOLUTION: The electronic apparatus is provided with a lengthwise apparatus body 10 having a display part 30; a keyboard 20, which is arranged exposable and storable to the apparatus body 10, enabling the key entry operation, while laterally placing the apparatus body 10; and display control means 60, 61a for switching display configuration, such that the keyboard 20 makes the display part 30 in the apparatus body 10 perform display 70a in conformity with the use condition where the apparatus body 10 is vertically placed in a storing state, and the keyboard 20 makes the display part 30 perform the display 70b in conformity with the use condition, where the apparatus body 10 is laterally placed in an exposed state.

\* NOTICES \*

JPO and INPIT are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

## CLAIMS

---

[Claim(s)]

[Claim 1]A longwise equipment body which has an indicator, and a keyboard in which key input operations in the state where were provided to this equipment body so that exposure and storage were possible, and an equipment body was turned sideways are possible, This keyboard makes it display on an equipment body at an indicator according to condition of use which made an equipment body length by a housed state, Electronic equipment provided with a display control means which changes a display style so that a keyboard may make it

display on an indicator according to condition of use which turned an equipment body sideways in an exposure from an equipment body.

[Claim 2]The electronic equipment according to claim 1, wherein said indicator or said keyboard is attached to a transverse direction to said equipment body so that slide operation is possible.

[Claim 3]The electronic equipment according to claim 1, wherein it has a detection means to detect whether said keyboard is in a housed state, or it is in an exposure and said display control means is provided with a display control means corresponding to detection controlled to change a display style according to a detection result by this detection means.

[Claim 4]The electronic equipment according to claim 1 having provided a grasping part which can be grasped by condition of use in an exposure of said keyboard to said equipment body, and providing a final controlling element in which after operation is possible in this grasping part.

[Claim 5]The electronic equipment according to claim 1 providing a touch panel in said indicator.

---

[Translation done.]

#### \* NOTICES \*

JPO and INPIT are not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.\*\*\*\* shows the word which can not be translated.

3.In the drawings, any words are not translated.

---

#### DETAILED DESCRIPTION

---

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to electronic equipment.

[0002]

[Description of the Prior Art] In recent years, portable electronic devices, such as a cellular phone, PHS, an electronic notebook, and PDA, are used for uses, such as management of personal information, and information and telecommunications. Such a portable electronic device is equipped with the display screen and the key input section.

[0003] These days, since the electronic mail function etc. were carried in the portable electronic device and the opportunity of the character input has increased, the method used combining a portable electronic device and a keyboard type input device is proposed and put in practical use.

[0004] For example, a keyboard is built in a portable electronic device and the method used making expose this keyboard is proposed. Drawing 10 shows the conventional portable electronic device 100 which adopted this method. This portable electronic device 100 contains the keyboard 120 which is settled in the breadth of the longwise equipment body 110. And he makes it shift to the state of drawing 10 (b) from the state of drawing 10 (a), and is trying to expose the keyboard 120 by making the key covering 130 slide.

[0005] However, in such a conventional portable electronic device 100, in response to restrictions of the breadth of the equipment body 110, the key pitch and key size of the keyboard 120 will be restricted, and it was hard to perform key input operations.

[0006]

[Problem(s) to be Solved by the Invention] SUBJECT of this invention is providing electronic equipment key input operations' being easy and user-friendly.

[0007]

[Means for Solving the Problem] In order to solve the above SUBJECT, the

invention according to claim 1. For example, the longwise equipment body 10 which has the indicator 30 as shown in drawing 2, drawing 3, and drawing 6. The keyboard 20 in which key input operations in the state where were provided to this equipment body 10 so that exposure and storage were possible, and the equipment body 10 was turned sideways are possible. This keyboard 20 makes it display on the equipment body 10 at the indicator 30 according to condition of use which made the equipment body 10 length by a housed state (70a). It is characterized by electronic equipment provided with a display control means (drawing 6; 60, 61a) which changes a display style so that the keyboard 20 may make it display on the indicator 30 according to condition of use which turned the equipment body 10 sideways by an exposure from the equipment body 10 (70b).

[0008]According to the invention according to claim 1, if an indicator will be displayed by display control means by a display style which set a longwise equipment body by condition of use made into length in a housed state of a keyboard and a keyboard will be in an exposure by it, an indicator will be displayed by a display style which set a longwise equipment body by condition of use turned sideways. Thus, a display style changes and especially in an exposure of a keyboard. since it is displayed by a display style which set a longwise equipment body by condition of use turned sideways, an indicator sets caudad, for example, it is made to correspond in the longwise direction of an equipment body, and adoption of an oblong, comparatively large keyboard of key pitch or key size is attained, and key input operations are markedly alike and become easy.

[0009]As the invention according to claim 2 is shown in drawing 3 and drawing 9 in the electronic equipment according to claim 1, said indicator (drawing 3, 30) or said keyboard (drawing 9, 20A) is attached to a transverse direction to said equipment body 10 so that slide operation is possible.

[0010]In the electronic equipment according to claim 1, as shown in drawing 6 and drawing 8, the invention according to claim 3. Have a detection means 62 to detect whether said keyboard 20 is in a housed state, or it is in an exposure,

and said display control means (drawing 6, 60, 61a), It has a display control means (drawing 8, S1-S3) corresponding to detection controlled to change a display style according to a detection result by this detection means.

[0011]In the electronic equipment according to claim 1, as shown in drawing 7, the invention according to claim 4 formed the grasping part 13 which can be grasped by condition of use in an exposure of said keyboard 20 to said equipment body 10, and formed the final controlling elements 13a and 13b in which alter operation is possible in this grasping part 13.

[0012]According to the invention according to claim 4, in condition of use in an exposure of a keyboard, a grasping part can be grasped by one hand, and a final controlling element can be operated with the finger, and key input operations by a keyboard can also be performed by digiti manus of another side.

[0013]In the electronic equipment according to claim 1, the invention according to claim 5 formed the touch panel 30a in said indicator 30, as shown in drawing 6.

[0014]According to the invention according to claim 5, the touch input of the keyboard can be carried out by an indicator also in a housed state.

[0015]

[Embodiment of the invention]Hereafter, with reference to figures, an embodiment of the invention is described in detail.

[0016][A 1st embodiment] Suppose that PDA which is a keyboard built-in portable electronic device is explained in this embodiment. The perspective view and top view of PDA concerning this embodiment were shown in drawing 1 and drawing 2. Drawing 3 is a top view showing the state where the keyboard built in this PDA was exposed.

[0017]As for the equipment body 10 of PDA, as shown in drawing 1 and drawing 2, plane shape presents approximately rectangular form. This equipment body 10 is \*\* constituted with the base 11, the flexible region 12 provided to this base 11 so that a slide was possible, and the final controlling element 13 connected by the base 11 in one.

[0018]The base 11 is laminated component part which presents the

approximately rectangular form arranged on the back side of the flexible region 12 as shown in drawing 3, and the key group 11a is formed in the surface. A part of base 11 in which this key group 11a was formed will function as the keyboard 20. The key group 11a is arranged oblong, as shown in drawing 3, and the keyboard 20 is presenting oblong approximately rectangular form. And the transverse direction of this keyboard 20 is arranged so that the extending direction of the long side of the equipment body 10 may be met.

[0019]The flexible region 12 is the component part whose slide was enabled on the surface of the base 11 by the sliding mechanism mentioned later. The display screen 30 of approximately rectangular form is formed in the surface of this flexible region 12, and when this flexible region 12 is made to slide to the base 11, the keyboard 20 formed in the base 11 will be exposed (refer to drawing 3).

[0020]After the keyboard 20 has been exposed like drawing 3, according to the condition of use which turned the equipment body sideways, the character "ABC" (70b) is displayed on the display screen 30 by the extending direction of the long side of an equipment body. According to the condition of use to which the keyboard made the equipment body length by the housed state (not shown) like drawing 1 at the equipment body, the character "ABC" (70a) is displayed on the display screen 30 by the extending direction of the shorter side of an equipment body. The display screen 30 is provided with touch panel structure, and can input desired information by pen touch. As shown in drawing 1, the touch pen 40 for exclusive use used in the case of this pen input is inserted in the one side face of PDA dismountable.

[0021]The final controlling element 13 equips the surface with the trackball 13a and the operation key 13b which are control means. These trackballs 13a and the operation key 13b are used when an input, selection, etc. carry out predetermined information. When it is used for it for the equipment body 10, the final controlling element's 13 exposing the keyboard 20, and widening so that it may mention later, it functions also as a grasping part which can be grasped single hand. Under the present circumstances, the trackball 13a and the



operation key 13b can be operated by the digiti manus which grasped the final controlling element 13.

[0022]Next, the sliding mechanism to which the flexible region 12 is made to slide to the base 11 is explained using drawing 4 and drawing 5. Drawing 4 (a) is a top view showing the state before making the flexible region 12 slide to the base 11, and drawing 4 (b) is a sectional view of the B-B portion of drawing 4 (a). Drawing 5 is a top view showing the state where the flexible region 12 was made to slide to the base 11.

[0023]First, the composition of a sliding mechanism is explained. The sliding mechanism is \*\* constituted with the holding pin 11b provided in the base 11, the two bosses 12a and 12b prepared for the flexible region 12, and V shape spring 50 which is energizing means.

[0024]The holding pin 11b is formed in the surface (field which counters with the flexible region 12) of the base 11 (refer to drawing 4 (b)). This holding pin 11b functions as supporting V shape spring 50. That is, V shape spring 50 is supported on the base 11 by inserting this holding pin 11b in the winding part 51 of V shape spring 50 mentioned later. And the extended parts 52 and 53 of V shape spring 50 later mentioned centering on this winding part 51 can be rotated, and the flexible region 12 can be made to transmit the energizing force by V shape spring 50.

[0025]The two bosses 12a and 12b are formed in the rear face (the base 11 and the field which counters) of the flexible region 12 (refer to drawing 4 (b)). It functions as these two bosses 12a and 12b making the tip of the extended parts 52 and 53 of V shape spring 50 mentioned later contact, and making the flexible region 12 transmit the energizing force of V shape spring 50.

[0026]V shape spring 50 is an energizing means which comprises the winding part 51 and the extended parts 52 and 53 which extend symmetrically from this winding part 51. The holding pin 11b provided in the base 11 as described above is inserted in the winding part 51 of V shape spring 50. V shape spring 50 will be supported by this on the base 11.

[0027]In the state of drawing 4 (a), V shape spring 50 is energized so that the

extended parts 52 and 53 may rotate to the space upper part by using the winding part 51 as a rotating shaft. The tip of the extended parts 52 and 53 will be in contact with the two bosses 12a and 12b prepared for the flexible region 12, and the energizing force of V shape spring 50 will be told to the flexible region 12 via these bosses 12a and 12b.

[0028]The composition which permits and prevents the slide operation of a sliding mechanism is explained. The slide lever 13c is formed in the end of flexible region 12 slippage of the final controlling element 13, and the crevice 12c for a stop which makes the end of final controlling element 13 slippage of the flexible region 12 stop this slide lever 13c is established in it (refer to drawing 4 (a)).

[0029]The slide lever 13c is made movable to the space longitudinal direction of drawing 4 (a). The slide lever 13c is energized rightward [ space ] by the energizing means, and stops to the crevice 12c for a stop of the flexible region 12 by it. The slide operation of the flexible region 12 by a sliding mechanism is prevented by this locked state. On the other hand, if an energizing means is resisted and the slide lever 13c is moved leftward [ space ], a locked state with the crevice 12c for a stop of the flexible region 12 will be canceled. By release of this locked state, the slide operation of the flexible region 12 by a sliding mechanism is permitted.

[0030]Next, explanation of a sliding mechanism of operation is given.

[0031]First, in the state which showed in drawing 4, if the slide lever 13c of the final controlling element 13 is moved leftward [ space ], the locked state of the slide lever 13c and the crevice 12c for a stop will be canceled. Then, the extended parts 52 and 53 of V shape spring 50 energized rotate to the space upper part by using the winding part 51 as a rotating shaft, respectively. And the end of the extended parts 52 and 53 which these-rotate presses the bosses 12a and 12b of the flexible region 12 to the space upper part. As a result, the flexible region 12 will slide to the space upper part to the base 11. As a result of making the flexible region 12 slide to the space upper part with a sliding mechanism, it will be in the state where the keyboard 20 formed in the base 11 was exposed

(refer to drawing 5).

[0032]The flexible connector which is not illustrated is provided between the base 11 and the flexible region 12. After shifting to the state of drawing 5 from drawing 4, the keyboard 20 and the flexible region 12 which were established in the base 11 are electrically connected by this flexible connector. As a result, the information inputted using the keyboard 20 will be transmitted to the flexible region 12, and will be displayed on the display screen 30.

[0033]Drawing 6 is an explanatory view for explaining the electric composition of PDA concerning this embodiment. As shown in drawing 6, PDA is provided with CPU60, the memory measure 61, and the switching condition detection sensor 62, and these are electrically connected via the bus. Above mentioned keyboard 20, display screen 30, trackball 13a, and operation key 13b are also electrically similarly connected to CPU60. The display screen 30 is provided with the touch panel structure 30a as it described above, and it can transmit the input signal by pen touch to CPU60.

[0034]The memory measure 61 makes the display automatic change program 61a which changes automatically the display style of the display screen 30 besides various control programs memorize, and is controlled by CPU60. As this memory measure 61, ROM (Read Only Memory), RAM (Random Access Memory), a flash memory, etc. are employable.

[0035]The switching condition detection sensor 62 is a detection means to detect whether it is in the state (henceforth an "opened state") where the keyboard 20 was exposed, or it is in the state (henceforth a "closed state") where the keyboard 20 is not exposed. That is, in being in an opened state as PDA showed to drawing 3 and drawing 5, that is detected and it transmits the signal of the purport "it is in an opened state" to CPU60. On the other hand, in being in a closed state as PDA showed to drawing 1, drawing 2, and drawing 4, that is detected and it transmits the signal of the purport "it is in a closed state" to CPU60.

[0036]CPU60 starts the display automatic change program 61a which the memory measure 61 was made to memorize in response to the signal sent from

the switching condition detection sensor 62, and changes the display style of the display screen 30 automatically. That is, when the signal of the purport "it is in an opened state" from the switching condition detection sensor 62 is sent, CPU60 performs the display automatic change program 61a, and makes the display screen 30 an oblong display style. Here, "an oblong display style" means the display style for widening the equipment body 10 of PDA and making it use it. For example, as shown in drawing 3, it is a display style as which the character "ABC" (70b) is displayed on the display screen 30 by the extending direction of the long side of an equipment body according to the condition of use which turned the equipment body sideways.

[0037]On the other hand, when the signal of the purport "it is in a closed state" from the switching condition detection sensor 62 is sent, CPU60 performs the display automatic change program 61a, and makes the display screen 30 a longwise display style. Here, "a longwise display style" means the display style for making the equipment body 10 of PDA longwise and making it use it. For example, as shown in drawing 1 or drawing 2, it is a display style as which the character "ABC" (70a) is displayed on the display screen 30 by the extending direction of the shorter side of an equipment body according to the condition of use which made the equipment body length. CPU60, the display automatic change program 61a, and the switching condition detection sensor 62 which were explained above constitute a display control means.

[0038]CPU60 also controls the keyboard 20, the trackball 13a and the input signal from the operation key 13b, and the output signal outputted to the display screen 30. The signal inputted into the display screen 30 provided with the touch panel structure 30a by pen touch is also controlled by CPU60.

[0039]Next, the directions for PDA concerning this embodiment are explained using drawing 2, drawing 3, and drawing 7.

[0040]The method at the time of using it in the state (closed state) where the flexible region 12 covers the base 11 top to the <directions for longwise display mode> beginning, and the keyboard 20 is not exposed to it as shown in drawing 2 is explained. Since this operating mode is what displays a request on a

display screen in the state where the equipment body 10 of PDA has been arranged longwise, it is called the following "longwise display mode."

[0041]In a longwise display mode, since the keyboard 20 is not exposed, the switching condition detection sensor 62 detects "it is in a closed state", and transmits a signal to that effect to CPU60. CPU60 which received the signal of the purport "it is in a closed state" performs the display automatic change program 61a, and makes the display screen 30 a longwise display style. For example, according to the condition of use to which the keyboard made the equipment body length like drawing 1 at the equipment body by the housed state (it did not illustrate but the keyboard is hidden in drawing 1), the character "ABC" (70a) is displayed on the display screen 30 by the extending direction of the shorter side of an equipment body. In this longwise display mode, the trackball 13a and the operation key 13b can be operated, and desired information can be inputted. Desired information can also be inputted into the display screen 30 provided with touch panel structure with the touch pen 40.

[0042]The method at the time of using it, making it shift to the state (opened state) of drawing 3 to which the flexible region 12 was made to slide to the base 11, and the keyboard 20 was exposed from <the directions for an oblong display mode>, next the state (closed state) of drawing 2 is explained. First, in the state which showed in drawing 2, the slide lever 13c of the final controlling element 13 is moved to space down. Then, the locked state of the slide lever 13c and the crevice 12c for a stop of the display screen 12 is canceled, and the flexible region 12 slides to space left-hand side to the base 11 with the above mentioned sliding mechanism. As a result, it will be in the state where the keyboard 20 was exposed as shown in drawing 3.

[0043]Thus, if it shifts to the state (opened state) where the flexible region 12 slid to the base 11, and the keyboard 20 was exposed, the switching condition detection sensor 42 will detect "it is in an opened state", and will transmit a signal to that effect to CPU60. CPU60 which received the signal of the purport "it is in an opened state" performs the display automatic change program 61a, and changes the display screen 30 to an oblong display style automatically. For

example, after the keyboard 20 has been exposed like drawing 3, according to the condition of use which turned the equipment body sideways, the character "ABC" (70b) is displayed on the display screen 30 by the extending direction of the long side of an equipment body. By the above procedure, the shift to the state of drawing 3 of drawing 2 from a state is completed. Since this operating mode is what displays a request on a display screen in the state where the equipment body 10 of PDA has been arranged oblong, it is called the following "oblong display mode."

[0044]In an oblong display mode, desired character input operation can be performed using the keyboard 20. For example, PDA can be laid in a predetermined place, the key group 11a of the keyboard 20 can be pressed with the finger of both hands, and character input operation can be performed. As shown in drawing 7, the final controlling element 13 of PDA can be grasped by one hand, the key group 11a of the keyboard 20 can be pressed by the digiti manus of another side, and character input operation can also be performed. In this case, the trackball 13a and the operation key 13b which were provided in the final controlling element 13 can be operated simultaneously, and desired information can also be inputted.

[0045]The function of a character input can be given to the trackball 13a and the operation key 13b like the keyboard 20. The function as a pointing device to which the cursor on the display screen 30 made into the oblong display style is moved can also be given to these trackballs 13a and the operation key 13b.

[0046]After performing character input operation using the keyboard 20, the flexible region 12 in the state of drawing 3 can be made to be able to slide to space right-hand side, the crevice 12c for a stop can be made to be able to stop the slide lever 13c, and it can return to the state of drawing 2.

[0047]Drawing 8 is the flow chart which showed the operation procedures of PDA concerning this embodiment. In the initial state which switched on the power supply of PDA, when CPU60 controls the display automatic change program 61a, the display screen 30 is made into the longwise display style (longwise display process: S1). Then, it is detected whether the switching



condition detection sensor 62 has the keyboard 20 in an exposure (switching-condition detection process: S2).

[0048]For example, when move the slide lever 13c, the flexible region 12 is made to slide and the keyboard 20 is exposed, it detects the switching condition detection sensor 62 "is in an opened state", and a signal to that effect is transmitted to CPU60. CPU60 controls the display automatic change program 61a in response to this signal, and changes the display screen 30 to an oblong display style (display-switching process: S3). On the other hand, in not exposing the keyboard 20, it detects the switching condition detection sensor 62 "is in a closed state", and transmits a signal to that effect to CPU60. CPU60 which received this signal continues the longwise display style of the display screen 30.

[0049]In PDA concerning this embodiment, since it is arranged so that the keyboard 20 may be oblong and the transverse direction may meet the extending direction of the long side of the equipment body 10, key pitch and comparatively large key size can be taken.

[0050]In PDA concerning this embodiment, where the long side of the equipment body 10 is adjoined the keyboard 20, when being exposed, the display style of the display screen 30 can be automatically changed by a display control means. For this reason, it can be used in the state where have arranged the display screen 30 up and the comparatively large keyboard 20 of key pitch or key size has been arranged caudad. for this reason, key input operations are markedly alike, and are easy, and it is very user-friendly.

[0051]In PDA concerning this embodiment, the equipment body 10 is provided with the final controlling element 13, and the trackball 13a and the operation key 13b are formed in this final controlling element 13. For this reason, the keyboard 20 is exposed, when using the equipment body 10, widening it, the final controlling element 13 can be grasped by one hand, and the trackball 13a and the operation key 13b can be operated by that digiti manus. Furthermore in this case, the key input operations which used the keyboard 20 can be performed by the digiti manus of another side (refer to drawing 7).

[0052]In PDA concerning this embodiment, since the display screen 30 is provided with the touch panel structure 30a, when not exposing the keyboard 20, desired information can be inputted by performing predetermined pen touch operation to the display screen 30.

[0053]Since the keyboard 20 is built in the equipment body 10, PDA concerning this embodiment also has the advantage that need to prepare a keyboard and it is not necessary to carry it separately.

[0054]In PDA concerning this embodiment, the equipment body 10 is grasped, the slide lever 13c can only be moved by the grasped digiti manus, the flexible region 12 can be made to be able to slide to the base 11, and the keyboard 20 can be exposed. That is, since the keyboard 20 can be exposed by one-touch, it is very user-friendly.

[0055][A 2nd embodiment] In PDA concerning a 1st embodiment, PDA concerning this embodiment changes the structure of an equipment body and a keyboard, and the exposure mode of this keyboard, and is substantially the same about other composition. For this reason, explanation is omitted about the duplicate composition.

[0056]In PDA concerning this embodiment, the equipment body 10A is provided with a stowage, and the keyboard 20A is stored in this stowage. This keyboard 20A can be pulled out from the one side face of the equipment body 10A to the method of outside, and where the long side of the equipment body 10A is adjoined, it can be exposed.

[0057]The keyboard 20A is provided with key group 20Aa of oblong arrangement, and is presenting oblong approximately rectangular form. And the transverse direction of this keyboard 20A is arranged so that the extending direction of the long side of the equipment body 10A may be met. Drawing 9 is a top view showing the state where the keyboard 20A was pulled out and exposed from the one side face of the equipment body 10A of PDA concerning this embodiment.

[0058]What is used from the former can be used for the mechanism which makes the keyboard 20A withdrawal from the one side face of the equipment



body 10A to the method of outside. For example, the sliding mechanism using an energizing means as shown by a 1st embodiment can be adopted, and it can be made to pull out and expose by one-touch. The mechanism to which the projected rim provided along the short side of the keyboard 20A is made to fit into the guide groove established in the stowage of the equipment body 10A, and it carries out slide possible is also employable.

[0059]PDA concerning this embodiment has the same electric constitution as PDA concerning a 1st embodiment. For this reason, when the keyboard 20A is exposed, the display style of the display screen 30A can be automatically changed by a display control means. For this reason, it can be used in the state where have arranged the display screen 30A up and the comparatively large keyboard 20A of key pitch or key size has been arranged caudad. for this reason, key input operations are markedly alike, and are easy, and it is very user-friendly.

[0060]In an above embodiment, when a keyboard was exposed, the example which changes the display style of a display screen was shown automatically, but it is not restricted to this. For example, after exposing a keyboard, composition which changes the display style of a display screen is also employable manually by predetermined switching on.

[0061]

[Effect of the Invention]According to the invention according to claim 1, if an indicator will be displayed by the display control means by the display style which set the longwise equipment body by the condition of use made into length in the housed state of the keyboard and a keyboard will be in an exposure by it, an indicator will be displayed by the display style which set the longwise equipment body by the condition of use turned sideways. Thus, a display style changes and especially in the exposure of a keyboard. since it is displayed by the display style which set the longwise equipment body by the condition of use turned sideways, an indicator sets caudad, for example, it is made to correspond in the longwise direction of an equipment body, and adoption of the oblong, comparatively large keyboard of key pitch or key size is attained, and

key input operations are markedly alike and become easy.

[0062]According to the invention according to claim 4, in the condition of use in the exposure of a keyboard, a grasping part can be grasped by one hand, and a final controlling element can be operated with the finger, and the key input operations by a keyboard can also be performed by the digiti manus of another side.

[0063]According to the invention according to claim 5, the touch input of the keyboard can be carried out by an indicator also in a housed state.

---

[Translation done.]

\* NOTICES \*

JPO and INPIT are not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.\*\*\*\* shows the word which can not be translated.

3.In the drawings, any words are not translated.

---

## DESCRIPTION OF DRAWINGS

---

[Brief Description of the Drawings]

[Drawing 1]It is a perspective view of PDA concerning a 1st embodiment of this invention.

[Drawing 2]It is a top view of PDA of drawing 1.

[Drawing 3]It is a top view showing the state where the keyboard of PDA of drawing 2 was exposed.

[Drawing 4]It is for explaining the sliding mechanism of PDA concerning a 1st

embodiment of this invention, and the explanatory view showing the state before (a) makes a flexible region slide to a base, and (b) are the sectional views of the B-B portion of (a).

[Drawing 5]It is for explaining the sliding mechanism of PDA concerning a 1st embodiment of this invention, and is an explanatory view showing the state where the flexible region was made to slide to a base.

[Drawing 6]It is an explanatory view for explaining the electric constitution of PDA concerning a 1st embodiment of this invention.

[Drawing 7]It is a perspective view showing an example of the operating mode of PDA concerning a 1st embodiment of this invention.

[Drawing 8]It is a flow chart for explaining the use procedure of PDA concerning a 1st embodiment of this invention.

[Drawing 9]It is a top view of PDA concerning a 2nd embodiment of this invention.

[Drawing 10](b) is an explanatory view showing the state where the keyboard exposed the state where the conventional keyboard built-in portable electronic device is shown, and the keyboard had not exposed (a), respectively.

[Description of Notations]

10 Equipment body

11 Base

11a Key group

11b Holding pin

12 Flexible region

12a Boss

12b Boss

12c The crevice for a stop

13 Grasping part

13a Trackball

13b Operation key

13c Slide lever

20 Keyboard

20A Keyboard  
20Aa key group  
30 Display screen  
30A Display screen  
30a Touch panel  
40 Touch pen  
50 V shape spring  
51 Winding part  
52 Extended part  
53 Extended part  
60 CPU  
61 Memory measure  
61a Display automatic change program  
62 Switching condition detection sensor  
100 Keyboard built-in portable electronic device  
110 Equipment body  
120 Keyboard  
130 Key covering

---

[Translation done.]

\* NOTICES \*

JPO and INPIT are not responsible for any  
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not  
reflect the original precisely.

2.\*\*\*\* shows the word which can not be translated.

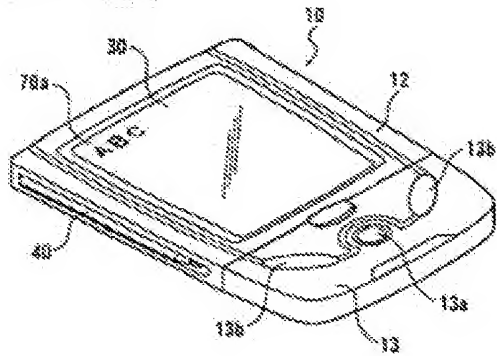
3.In the drawings, any words are not translated.

---

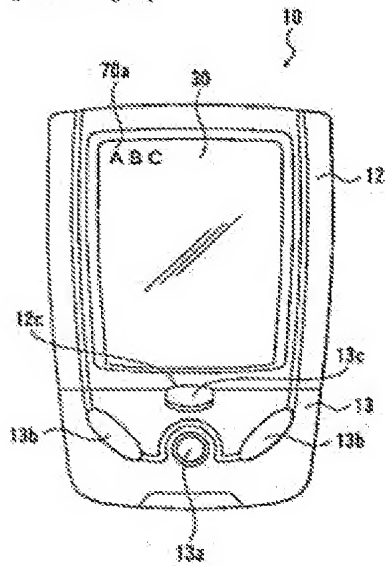
## DRAWINGS

---

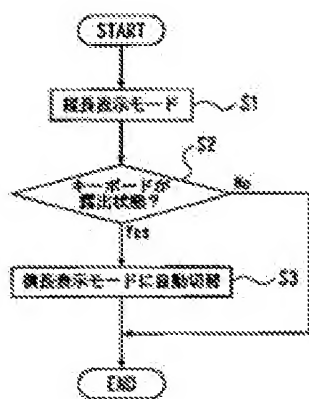
[Drawing 1]



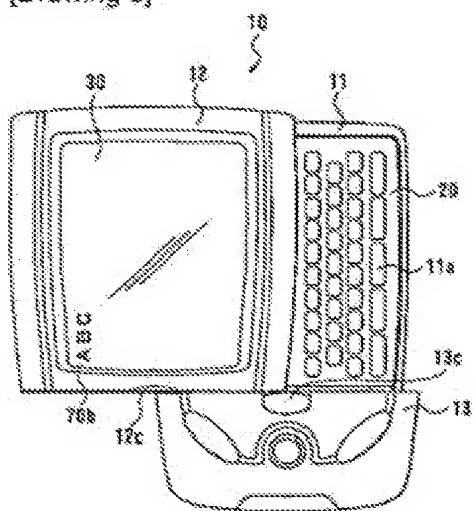
[Drawing 2]



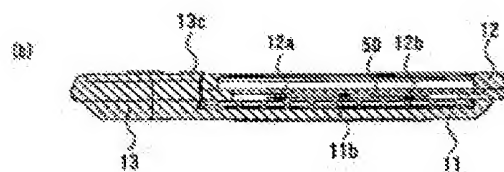
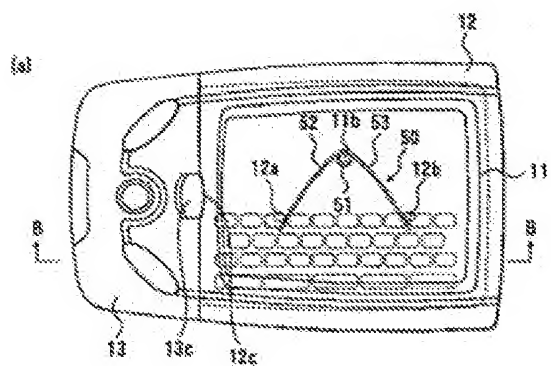
[Drawing 8]



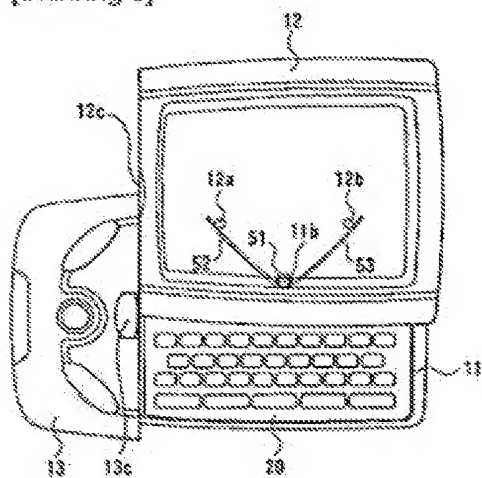
[Drawing 3]



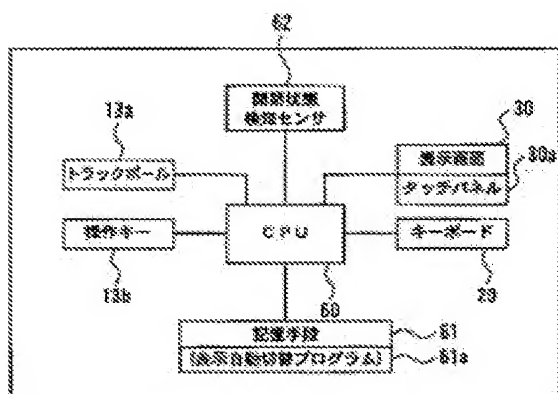
(Drawing 4)



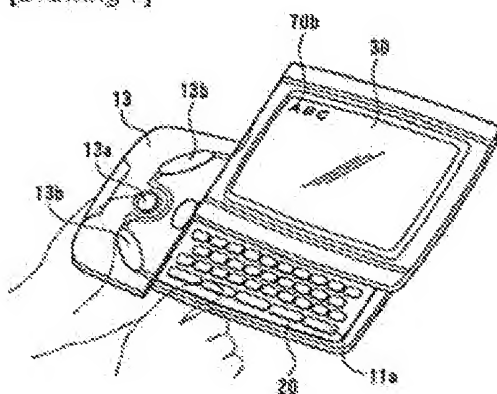
[Drawing 5]



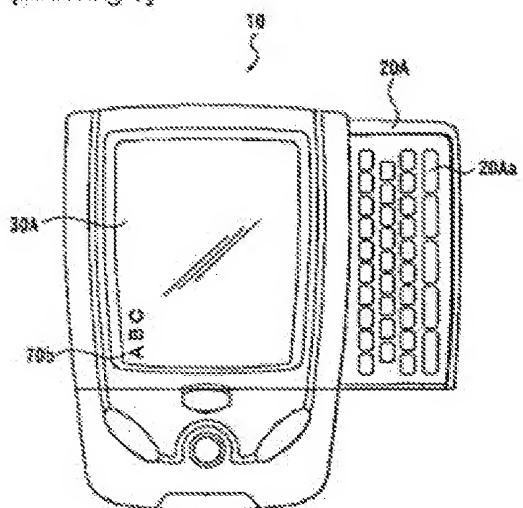
[Drawing 6]



[Drawing 7]

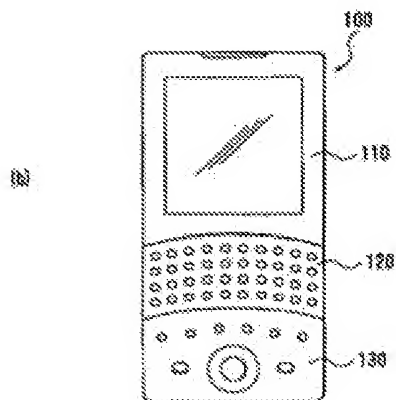
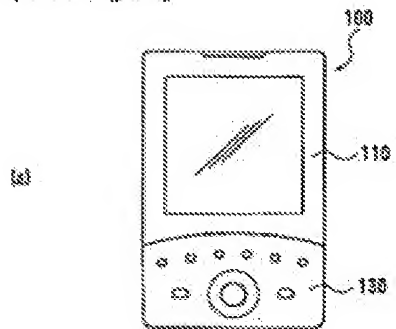


[Drawing 9]





[Drawing 10]



---

[Translation done.]